

Work Order ID 54913

January 5, 2010 9:26:38 AM



Page 1

Item ID: D206-642-241

Accept



Setup Start



Revision ID:

Stop



Item Name: Replacement Skidtube

Start Date: 05/01/2010 Start Qty: 1.00

Cust Item ID:

Required Date: 18/01/2010 Req'd Qty: 1.00

Customer:

Reference:

Run Start



Approvals:

Process Plan: *PL*

Date: *10-1-05*

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr

Revision Nbr

D2650

Rev F

100

0.00



DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy bluefile & type labels per PPP D206-642-241

CHG003

005

N/A

110

0.00



Skidtubes

Skidtubes

Memo

0.00

Skidtubes

1-Deburr Fwd edge of tube 2- Remove ridge on inside of Fwdedge of tube as per Dwg D2650 3-Weld Fwd Cap as per Dwg D2650. Use aluminum rod. Grind D2647 to fit as required. Pick: Qty Part Number Description Batch A/R Aluminum Rod *m112507* 4-G *m112860*

① BE 10/01/06

RO

120

0.00



QC6- Inspect dimensions to drawing

QC

Memo

0.00

Quality Control

2781010107

①

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Routing Print

January 7, 2010 10:54:09 AM

Page 1 of 5

Routing Seq ID/ Description/Memo	Work Center ID	Tool Kit/Tape	Std Process ID/ Description	Yield %	Queue Time	Setup Time	Machine Time	Labor Time	Move Time	Var. Outpl/ Outpl. LT
Item ID: D206-642-241		Item Name: Replacement Skidtube								
Routing Type: Production										
100	DC			100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
DOCUMENT CONTROL					0.0000	0.0000	0.0000	0.0000	0.0000	
Photocopy bluefile & type labels per PPP D206-642-241					CHG005					
Total for Routing Sequence [100] :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
110	Skidtubes			100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Skidtubes					0.0000	0.0000	0.0000	0.0000	0.0000	
1-Deburr Fwd edge of tube										
2- Remove ridge on inside of Fwd edge of tube as per Dwg D2650										
3-Weld Fwd Cap as per Dwg D2650. Use aluminum rod. Grind D2647 to fit as required. Pick: Qty <input type="checkbox"/> Part Number <input type="checkbox"/> Description <input type="checkbox"/> Batch A/R <input type="checkbox"/> Aluminum Rod <input type="checkbox"/>										
4-Grind weld flush to cap on top surface only.										
5-Cut Aft end as per dwg 2650 from front of tube and Deburr										
6-Remove inner indexing ridge on Aft end of skidtube as per Dwg D2650										
7-Open holes for Aft end cap as per Dwg D2650 with #30 Drill Bit using DT8025.										
8-Drill pilot holes using Dt 8167.										
9-Locate DT8732 from inner Aft saddle hole & 3rd crossbolt hole. Insert D3286-1 doubler using DT8732 & D206-642-241-T1, then locating doubler off of 3/16" holes, cleco DT8732 & doubler leaving DT8732 for added support.										
10- Drill D3286-1 doubler rivet holes in tube using # 30 drill, spot drilling doubler at the same time.										
11-Working from the center out, drill # 30 holes into D3286-1 doubler. Cleco each hole as it is being drilled. Verify angle of holes to accommodate rivet heads.										
12-Remove 3/16" cleco's only and open GHW holes to Ø0.500" as per Dwg D2650										
13-Remove D3286-1 doublers, identify orientation, deburr, then attach them to the workorder										
14-Remove indexing edge using DT8741 as per Dwg D2650										
15-C'sink GHW rivet holes as per Dwg D2650										
Total for Routing Sequence [110] :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

See 1st sheet. HJ

H 10/11/7

Routing Print

January 7, 2010 10:54:11 AM

Page 2 of 5

Routing Seq ID/ Description/Memo	Work Center ID	Tool Kit/Tape	Std Process ID/ Description	Yield %	Queue Time	Setup Time	Machine Time	Labor Time	Move Time	Var. Outpl/ Outpl. LT
120	QC		QC6	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			QC6- Inspect dimensions to drawing	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	
Total for Routing Sequence 120 :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
130	Skidtubes			100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Skidtubes					0.0000	0.0000	0.0000	0.0000	0.0000	
1-Open crossbolt holes to Ø0.3125"										
2-Drill pilot holes using DT8028-3, then open to Ø0.297" as per Dwg D2650. Open Aft cap hole #6.										
3-Deburr tube and blow out chips from inside the tube										
Total for Routing Sequence 130 :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
140	HandFinish		HandFinish1	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Chemical Conversion Coat per QSI005 4.1	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	
Total for Routing Sequence 140 :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
150	QC		QC3	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			QC3- Inspect Part Finish	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	
Total for Routing Sequence 150 :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
160	Skidtubes			100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Skidtubes					0.0000	0.0000	0.0000	0.0000	0.0000	
1-Open holes to finished size as per Dwg D2650, D2650-3 Drilling Detail (without cutting fluid)										
2-C'sink crossbolt spacer holes as per Dwg D2650(without cutting fluid)										
3-Deburr and blow out all chips from inside the tube										
Total for Routing Sequence 160 :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
170	QC		QC6	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			QC6- Inspect dimensions to drawing	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	
Total for Routing Sequence 170 :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Sidolo2

u 10/1/11

u 10/1/11

u 10/1/11

Sidolo2

Routing Print

January 7, 2010 10:54:18 AM

Page 3 of 5

Routing Seq ID/ Description/Memo	Work Center ID	Tool Kit/Tape	Std Process ID/ Description	Yield %	Queue Time	Setup Time	Machine Time	Labor Time	Move Time	Var. Outpl/ Outpl. LT
180 Skidtubes	Skidtubes			100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
					0.0000	0.0000	0.0000	0.0000	0.0000	

1-Locate, install and rivet doublers as per Dwg D2650. Micro-shave rivets as required

2-Bond D2654-3 web in place as per QSI 015. Ensure holes line up. Allow 12 Hrs. cure time before cutting

Start Date: 10-1-11 Time: 3:00

Finish Date: Time:

Pick:

Qty: Part Number: Description: Batch

A/R: Sikaflex-291 112395

Sikaflex expire date: 10-02-20

AWM 10-01-11

Total for Routing Sequence 180 :				0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
190	QC	QC5	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
		QC5- Inspect part	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
		completeness to							
		step on W/O							

810612

Total for Routing Sequence 190 :				0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
200	Skidtubes		100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Skidtubes			0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

1-remove alodine from around hole and prepare for welding

BE 10/01/12

2-Prep per QSI 005 and Insert D2649 crossbolt spacers. Weld as per QSI 004 and Dwg D2650. Remember to back drill each hole to 0.25" before welding the other side. Use aluminum rod.

Pick:

Qty: Part Number: Description: Batch

A/R: Aluminum Rod 1112507

BE 10/01/12

3-Grind welds flush as per Dwg D2650.

AWM 10-01-12

4-Using DT8733, insert (2) D3286-3 spacers as per QSI 004 and Dwg D2650. Remember to back drill each hole to 0.402" before welding other side. Use SS rod as required.

A/R: SS Rod NONE BE 10/01/12

5-Counterbore 5/16" x 0.750" deep except 7th hole from Aft end as per Dwg D2650. Deburr

AWM 10-1-12

Total for Routing Sequence 200 :				0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
210	HandFinish		100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	HandFinishing			0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Install D2680-041 Nut Plate as per Dwg D2650

AWM 10-1-12

Total for Routing Sequence 210 :				0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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1101120

Routing Print

January 7, 2010 10:54:19 AM

Page 4 of 5

Routing Seq ID/ Description/Memo	Work Center ID	Tool Kit/Tape	Std Process ID/ Description	Yield %	Queue Time	Setup Time	Machine Time	Labor Time	Move Time	Var. Outpl/ Outpl. LT
220	QC		QC9	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			QC9- Inspect visual per QSI004- Fusion Welds	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	
Total for Routing Sequence 220 :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
230	QC		QC5	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			QC5- Inspect part completeness to step on W/O	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	
Total for Routing Sequence 230 :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
240	HandFinish		HandFinish2	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			Pressure Wash per QSI005 4.3	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	
Total for Routing Sequence 240 :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
250	Powdercoat		Powdercoat1	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			White Gloss(Ref:4.3.5.1) per QSI005 4.3- Alum	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	
Total for Routing Sequence 250 :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
260	QC		QC3	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			QC3- Inspect Part Finish	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	
Total for Routing Sequence 260 :					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

START TIME: 11:00AM
OVEN TEMPERATURE: 320°F
FINISH TIME: 11:30AM

bp 10-01-20

QC9 - PD 10.01.14

QC10 - 8.10.14

Si 10.01.20

Routing Print

January 7, 2010 10:54:24 AM

Page 5 of 5

Routing Seq ID/ Description/Memo	Work Center ID	Tool Kit/Tape	Std Process ID/ Description	Yield %	Queue Time	Setup Time	Machine Time	Labor Time	Move Time	Var. Outpl/ Outpl. LT
270 HandFinishing	HandFinish			100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
					0.0000	0.0000	0.0000	0.0000	0.0000	

1- Install inserts & wearpads as per dwg D2922. Use a drop of Sikaflex inside insert holes before installing wearpad/wearplate.

A/R ☐ Sikaflex-291 M112345

Sikaflex expire date: 10/08

2-Install D2651-3 O-Rings on D2651-I plugs with Petroleum Jelly and install plugs as per Dwg D2650 (D2650-3 detail). Clean excess adhesive

3-Install MS27039-4-06 Screw as per DEO 9153.

4 -Install D2646 Aft Cap and seal with Sikaflex. Clean excess adhesive

A/R ☐ Sikaflex-291 M112345

Sikaflex expire date: 10/08

5 -Wing Walk as per Dwg D2650-3 and QSI 005 4.4

A/R Batch: 112900

Batch: _____

Total for Routing Sequence [270] :				0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
300	QC	QC5	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
		QC5- Inspect part	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
		completeness to							
		step on W/O							

Total for Routing Sequence [300] :				0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
310	Packaging		100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Packaging			0.0000	0.0000	0.0000	0.0000	0.0000	

Identify and pack for shipping as per PPP D206-664-241

Location: _____

PPP Rev: _____

Total for Routing Sequence [310] :				0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
320	QC	QC21	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
		QC21- Final	100.00%	0.0000	0.0000	0.0000	0.0000	0.0000	
		Inspection - Work							
		Order Release							

Total for Routing Sequence [320] :				0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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Total for Alternate Route [Production] of Item [D206-642-241]:				0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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Handwritten: 10-a-25 D

Work Order ID 54913

Page 2

January 5, 2010 9:26:38 AM

Item ID: D206-642-241

Accept



Setup Start



Revision ID:

Stop



Item Name: Replacement Skidtube

Start Date: 05/01/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 18/01/2010 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals:

Process Plan:

Date:

Tooling:

Date:

Stop



QC:

Date:

SPC (Y/N):

Date:

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

130



Skidtubes

Skidtubes

0.00

Memo

0.00

1-Open crossbolt holes to Ø0.3125" 12-Drill pilot holes using DT8028-3, then open to Ø0.297" as per Dwg D2650. Open Aft cap hole #6. 3-Deburr tube and blow out chips from inside the tube

1 H 10/11/11

140



HandFinish

Chemical Conversion Coat per QS1005 4.1

0.00

Memo

0.00

Hand Finishing

1 H 10/11/11

150



QC

QC3- Inspect Part Finish

0.00

Memo

0.00

Quality Control

① BE 10/01/11

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 54913

January 5, 2010 9:26:38 AM



Page 3

Item ID: D206-642-241

Accept



Setup Start



Revision ID:

Stop



Item Name: Replacement Skidtube

Start Date: 05/01/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 18/01/2010 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals:

Process Plan:

Date:

Tooling:

Date:

Stop



QC:

Date:

SPC (Y/N):

Date:

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

160

0.00



Skidtubes

Skidtubes

Memo

0.00

Skidtubes

1-Open holes to finished size as per Dwg D2650, D2650-3 Drilling Detail (without cutting fluid) 2-C'sink crossbolt spacer holes as per Dwg D2650(without cutting fluid) 3-Deburr and blow out all chips from inside the tube

1 10/11/11

170

QC6- Inspect dimensions to drawing

0.00



QC

Memo

0.00

Quality Control

2> 8106011



180

0.00



Skidtubes

Skidtubes

Memo

0.00

Skidtubes

1-Locate, install and rivet doublers as per Dwg D2650. Micro-shave rivets as required 2-Bond D2654-3 web in place as per QSI 015. Ensure holes line up. Allow 12 Hrs. cure time before cutting. Start Date: 10-1-11 Time: 3:00 Finish Date: 10/1/12 Time: 2:11:00pm

1 10/11/11



stop silk after 291 B*

17 11/23/11

exp Date 10-02-20

AWM 10-1-11

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 54913



Page 4

January 5, 2010 9:26:38 AM

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Cust Item ID:

Required Date: 18/01/2010 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals:

Process Plan:

Date:

Tooling:

Date:

Stop



QC:

Date:

SPC (Y/N):

Date:

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

190

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

①

RE 12/01/12

5/10/12

200

Skidtubes

0.00



Skidtubes

Memo

0.00

Skidtubes

1-remove alodine from around hole and prepare for welding 2-Insert D2649 crossbolt spacers. Weld as per QSI 004 and Dwg D2650. Remember to back drill each hole to 0.25" before welding the other side. Use aluminum rod. Pick: QtyPart NumberDescriptionBat

①

RE 12/04/13

210

HandFinishing

0.00



HandFinish

Memo

0.00

Hand Finishing

Install D2680-041 Nut Plate as per Dwg D2650

h 10/11/20

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Page 5

January 5, 2010 9:26:38 AM

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Cust Item ID:

Required Date: 18/01/2010 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
220	QC9- Inspect visual per QS1004- Fusion Welds	0.00							
QC	Memo	0.00	QC 9 - PD 10.0114			(H)			
Quality Control			QC 10 - 510101/14						
230	QC5- Inspect part completeness to step on W/O	0.00							
QC	Memo	0.00	⇒ 510101/20			(H)			
Quality Control									
240	Pressure Wash per QS1005 4.3	0.00							
HandFinish	Memo	0.00	⇒ 1010101/20			(X)			
Hand Finishing									

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 54913

January 5, 2010 9:26:38 AM



Page 6

Item ID: D206-642-241

Accept



Setup Start



Revision ID:

Stop



Item Name: Replacement Skidtube

Start Date: 05/01/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 18/01/2010 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals:

Process Plan:

Date:

Tooling:

Date:

Stop



QC:

Date:

SPC (Y/N):

Date:

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

250

White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum

0.00



Powdercoat

Memo

0.00

=> JH 10-01-21 (X1) Ø

Powder Coating

START TIME:

11:00AM

OVEN TEMPERATURE:

11:30AM FINISH TIME

320°F

260

QC3- Inspect Part Finish

0.00



QC

Memo

0.00

SL 10 a 25 (1) Ø

Quality Control

270

HandFinishing

0.00



HandFinish

Memo

0.00

Hand Finishing

1- Install inserts & wearpads as per dwg D2922. Use a drop of Sikaflex inside insert holes before installing wearpad/wearplate. A/Sikaflex-291 112345 Sikaflex expire date: 10/08 2-Install D2651-3 O-Rings on D2651-1 plugs with Petroleum

SL 1001-23.

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 54913

January 5, 2010 9:26:38 AM



Page 7

Item ID: D206-642-241

Accept



Setup Start



Revision ID:

Stop



Item Name: Replacement Skidtube

Start Date: 05/01/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 18/01/2010 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals:

Process Plan:

Date:

Tooling:

Date:

Stop



QC:

Date:

SPC (Y/N):

Date:

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

280

0.00



HandFinishing

HandFinish

Memo

0.00

Hand Finishing

1-Install D2646 Aft Cap and seal with Sikaflex. Clean excess adhesive

A/RSikaflex-291 112345 Sikaflex expire date: 10/08 2-
Wing Walk as per Dwg D2650-3 and QSI 005 4.4 Batch: 01112903

bf 10-01-05

①

290

0.00



QC3- Inspect Part Finish

QC

Memo

0.00

Quality Control

⇒ 8 10/01/06

300

0.00



QC5- Inspect part completeness to step on W/O

QC

Memo

0.00

Quality Control

⇒ 8 10/01/06

④

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 54913

January 5, 2010 9:26:38 AM



Item ID: D206-642-241

Accept



Setup Start



Revision ID:

Stop



Item Name: Replacement Skidtube

Start Date: 05/01/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 18/01/2010 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals:

Process Plan:

Date:

Tooling:

Date:

Stop



QC:

Date:

SPC (Y/N):

Date:

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

310

0.00



Packaging

Packaging

Memo

0.00

Packaging

Identify and pack for shipping as per PPP D206664241
APPLICABLE Location: _____ PPP Rev: _____

MP 54913

10-2-3-2

320

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

10/02/04

MF 10-2-4

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Single-Level Bill

January 7, 2010 11:02:10 AM

Page 1 of 2

Criteria : Item ID: d206-642-241, All Product Families, All Item Types, All Categories, All Buyers/Planners, Effective Start Date: 1/07/10.

Single Level Bill of Material Standard Report As of: 1/07/10

Parent Item ID D206-642-241

Unit Measure Each

Replacement Item ID

Item Name Replacement Skidtube

Item ID	Item Name	Replacement Item ID	Qty/ Assy	Unit Measure	Eff. Start Date	Eff. Stop Date
---------	-----------	---------------------	-----------	--------------	-----------------	----------------

BOM Type Production

✓ D3286-1	Doubler		2.0000	Each	12/05/09	B47692 ② 11/01/11
✓ D2647	Cap		1.0000	Each	12/05/09	B43846 ① 11/01/17
✓ D2600-1-160	Extrusion Round 3" 206		1.0000	Each	1/07/10	B45898 ① 11/01/17
✓ D2654-3	Web		1.0000	Each	12/05/09	B448679 ① 11/01/17
✓ CR3212-4-04	Cherry Rivet		52.0000	Each	1/01/08	B4112612 58 11/01/17
✓ D2649	Cross Bolt Spacer		18.0000	Each	12/05/09	B47112 3E 10/01/13
✓ D3286-3	Spacer		2.0000	Each	12/05/09	B46643 3E 10/01/13
✓ D2680-041	Nut Plate		1.0000	Each	12/05/09	B55366 ① 11/01/17 AWM
✓ CR3212-4-03	Cherry Rivet		2.0000	Each	1/01/08	B44086 ① 11/01/17
✓ CCR264SS3-3	Cherry Rivet		2.0000	Each	1/01/08	B408658 ① 11/01/17 AWM
✓ D2646	Aft Cap		1.0000	Each	12/05/09	B44086 ① 11/01/17 AWM
✓ D2651-1	Plug		18.0000	Each	12/05/09	B44086 ① 11/01/17 AWM
✓ AN960JD416	Washer		1.0000	Each	1/01/08	B44086 ① 11/01/17 AWM
✓ D2651-3	O-Ring		18.0000	Each	12/05/09	B44086 ① 11/01/17 AWM
✓ MS27039-1-08	Screw		46.0000	Each	1/01/08	B44086 ① 11/01/17 AWM
✓ ALS4-1032-130	Insert		44.0000	Each	1/01/08	B44086 ① 11/01/17 AWM
✓ MS27039-4-06	Screw		1.0000	Each	1/01/08	B44086 ① 11/01/17 AWM
✓ AN960JD10L	Washer		46.0000	Each	1/01/08	B44086 ① 11/01/17 AWM
✗ D3537-1	Wearpad		4.0000	Each	1/07/10	B44086 ① 11/01/17 AWM

Bf 10-01-25.
B48109 1

H3990 18
113288 1

H6114 18
110647 46

110511 44
109061 1
110985 46

51678. 4

Single Level,Bill of Material Standard Report

As of:

1/07/10

Parent Item ID D206-642-241

Unit Measure Each

Replacement Item ID

Item Name Replacement Skidtube

Item ID	Item Name	Replacement Item ID	Qty/ Assy	Unit Measure	Eff. Start Date	Eff. Stop Date
D3537-3	Wearpad	33331	1	1.0000	Each	1/07/10
D3535-13	Wearshoe	38759	1	1.0000	Each	1/07/10
D3536-13	Gasket	38761	1	1.0000	Each	1/07/10
D3535-21	Wearshoe	37624	1	1.0000	Each	1/07/10
D3536-21	Gasket	37351	1	1.0000	Each	1/07/10
D3535-33	Wearshoe	51647	1	1.0000	Each	1/07/10
D3536-33	Gasket	51593	1	1.0000	Each	1/07/10

BK 10-01-25.

QTY -1	QTY -3	QTY -5	QTY -7	PART NUMBER	DESCRIPTION
X				D2650-1	SKIDTUBE ASSEMBLY
	X			D2650-3	SKIDTUBE ASSEMBLY
		X		D2650-5	SKIDTUBE ASSEMBLY
			X	D2650-7	SKIDTUBE ASSEMBLY
1	1	1	1	D2600-1-160	EXTRUSION
1				D2654-1	WEB
	1			D2654-3	WEB
		1		D2654-5	WEB
			1	D2654-7	WEB
1	1	1	1	D2646	AFT CAP
1	1	1	1	D2647	CAP
17	18	19	23	D2649	CROSS BOLT SPACER
16	18	14	22	D2651-1	PLUG
16	18	14	22	D2651-3	O-RING
1	1	1	1	D2680-041	NUT PLATE
2	2			D3286-1	DOUBLER
2	2			D3286-3	STUD
42	44	54	60	ALS7-1032-130	INSERT (or AKS4-1032-130, ALS4-1032-130, ALS7-1032-130)
2	2	2	2	AN960JD10L	WASHER
2	2	2	2	CCR264SS3-3	RIVET
2	2	2	2	CR3212-4-03	RIVET
2	2	2	2	MS27039-1-08	SCREW
1	1	1	1	MS27039-4-06	SCREW
1	1	1	1	AN960JD416	WASHER
52	52			CR3212-4-04	RIVET

F

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 54913

BY 10-1-05

RELEASED
08-07-23

F

NOTES:
MATERIAL: N/A
FINISH: -CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
-POWDER COAT WHITE (4.3.5.1) PER DART QSI 005 4.3
-BLACK ANTI-SKID PAINT AS INDICATED TO 0.5 ABOVE LOCATION RIDGE PER DART QSI 005 4.4

TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED

UNITS: INCHES UNLESS OTHERWISE NOTED

BREAK SHARP EDGES: 0.005 TO 0.010 MAX

IDENTIFICATION: NONE

WEIGHT: N/A

WELD PER DART QSI 004

DAMAGE TOLERANCE ON FWD BEND:

THERE SHOULD BE NO VISIBLE WRINKLES IN THE BEND FROM THE GROUND TO A HEIGHT OF 5 INCHES ABOVE THE GROUND. IT IS ACCEPTABLE TO POLISH OUT GOUGES UP TO 0.020 DEEP IN THE BENT PORTION OF THE TUBE. A MAXIMUM REDUCTION IN DIAMETER OF 0.150" IS ACCEPTABLE IN THE BENT PORTION OF THE TUBE.

) BOND WEB INTO OUTER TUBE WITH SIKAFLEX-2411-291 ADHESIVE PER DART QSI 015

) INSERT D2651-1 PLUG CW/ D2651-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE)

) DRILL Ø0.297 FOR ALS7-1032-130 INSERTS USING TEMPLATE DT8056-1 ON -1 TUBE, DT8056-3 ON -3 TUBE, DT8056-5 ON -5 TUBE, AND DT8056-7 ON -7 TUBE. INSTALL INSERTS AFTER FINISH.

) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED

REV.	DESCRIPTION	BY	DATE
F	DRAWING UPDATED TO CURRENT STANDARDS. SHT 6 ADDED. ALL SECTION AND DETAIL VIEWS TRANSFERRED TO SHT 6. SHT 1 IN PL PART D2649 QTY UPDATED. SHT 6 SECT C-C GRIND INSTRUCTIONS DELETED FROM NOTE 7 (SEE NCR 239).	AJS	08.08.08
E	REMOVE CBORE, CHG DRILL, ADD CHAMFER	CF	06.03.30
D	REDRAW; INCCRP. DE09136/9153/9163 MOD GROUND HANDLING ON D2650-1/-3	CP	04.05.17
C	CHANGE HOLE PATTERN AND FRONT END	DS	97.10.29
B	AS MANUFACTURED CHANGES	DS	97.06.26
A	NEW ISSUE	DS	97.03.25
DESIGN	DS	DART AEROSPACE USA, INC	
DRAWN	AJS	PORT HADLOCK, WVA	
CHECKED		DRAWING NO.	REV. F
MFG. APPR.		D2650	SHEET 1 OF 6
APPROVED		TITLE	SCALE
DE APPR.		206/407 SKIDTUBE ASSEMBLIES	NTS
DATE	08.08.08	COPYRIGHT © 1987 BY DART AEROSPACE USA, INC THIS DOCUMENT IS PRELIMINARY AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS UNDERSTANDING THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR REPRODUCED IN ANY MANNER WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

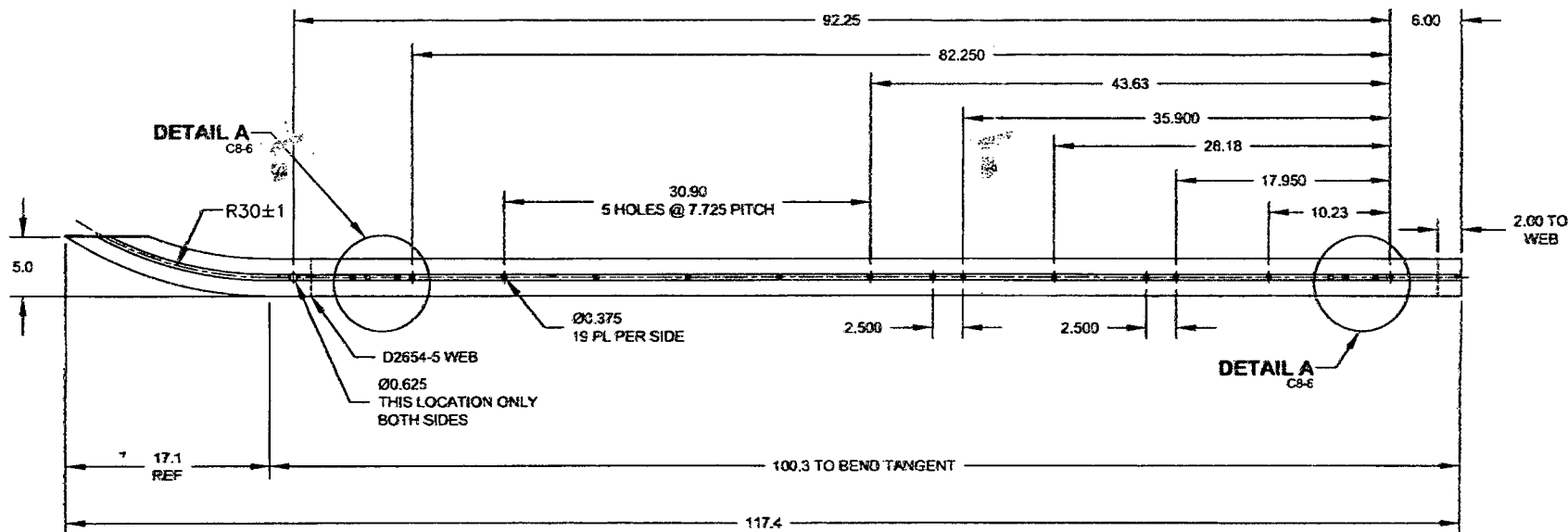
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

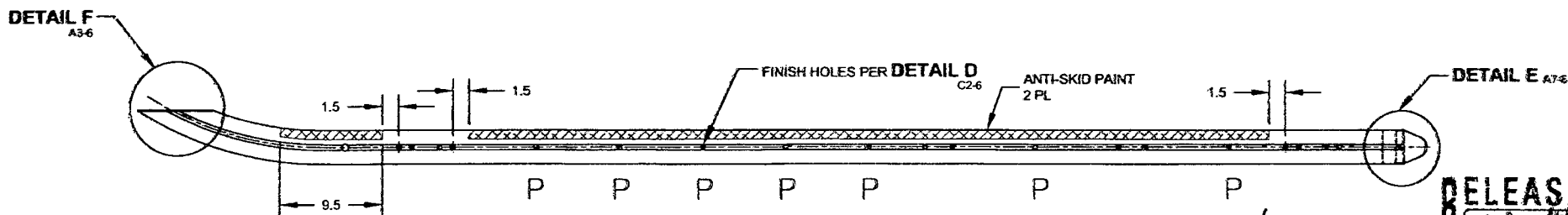
Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



D2650-5 BENDING/DRILLING DETAIL



D2650-5 ASSEMBLY/FINISHING DETAIL

W10 54913

DESIGN	DS	DART AEROSPACE USA, INC	
DRAWN	A/S	PORT HADLOCK, WA	
CHECKED		DRAWING NO.	REV. F
MFG. APPR.		D2650	SHEET 4 OF 6
APPROVED		TITLE	SCALE
DE APPR.		206/407 SKIDTUBE ASSEMBLIES	NTS
DATE	08.08.08	<small>COPYRIGHT © 1987 BY DART AEROSPACE USA, INC THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.</small>	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

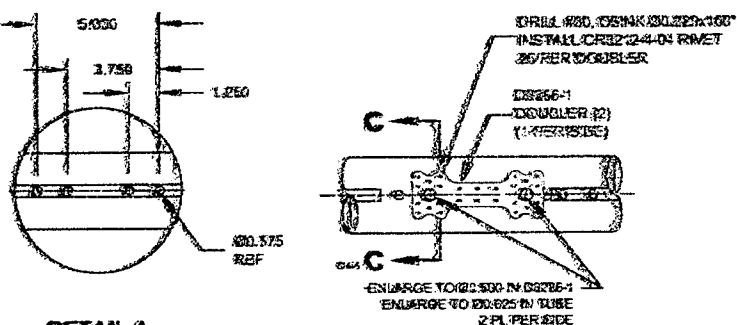
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

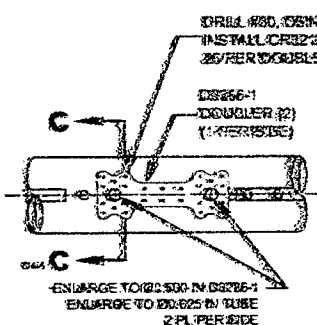
Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

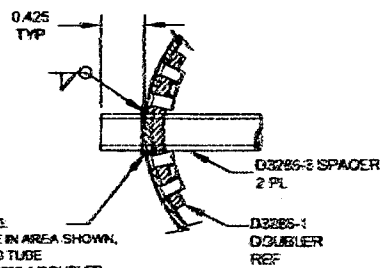


DETAIL A C2-2
SCALE 2X C2-3
C2-4
C2-5
C2-6
C2-7

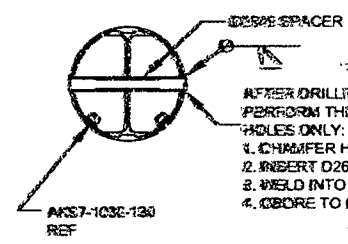


DETAIL B C3-2
SCALE 2X C3-3

SECTION C-C C7-6
SCALE NONE

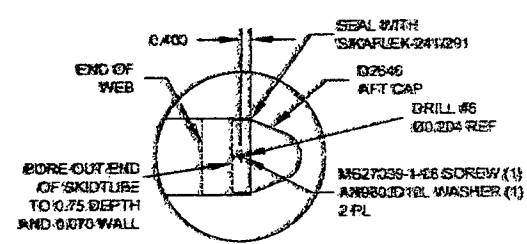


- TO INSTALL D3286-1-1/3:
1. GRIND OFF FLANGE IN AREA SHOWN, FLUSH WITH ROUND TUBE
 2. LOCATE & DRILL D3286-1 DOUBLER USING DT3285-1T1
 3. ENLARGE HOLES IN D3286-1 TO Ø0.500
 4. ENLARGE HOLES IN TUBE TO Ø0.625 AND CHAMFER HOLE 0.030x45°
 5. RIVET D3286-1 TO TUBE
 6. INSERT D3286-3 SPACER
 7. WELD IN PLACE.

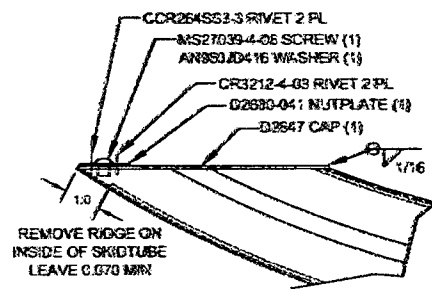
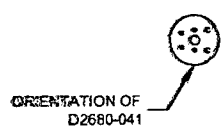


DETAIL D B4-2
FOR Ø0.375 HOLES ONLY B4-3
SCALE 3X B4-4
B4-5

- AFTER DRILLING AND BENDING ASSEMBLY PERFORM THE FOLLOWING FOR Ø0.375 HOLES ONLY:
1. CHAMFER HOLE 0.030 X 45°
 2. INSERT D2649 SPACER
 3. WELD INTO PLACE AND GRIND FLUSH
 4. BORE TO Ø0.313 X 0.75 DFP



DETAIL E B2-2
SCALE 2X B2-3
B2-4
B2-5



DETAIL F B2-2
SCALE NONE B2-3
B2-4
B2-5

DETAIL F NOTES:

1. CUT TUBE LEVEL
2. REMOVE RIDGE ON FWD SIDE
3. LOCATE D2647 (TRIM AS NECESSARY)
4. WELD D2647 IN PLACE PER DART QSI 604
5. GRIND FLUSH
6. RIVET D2680-041 NUT PLATE IN PLACE

NOTE: MASK THREADS IN D2680-041 PRIOR TO FINISH

RELEASED

W10 54913

DESIGN	DS	DART AEROSPACE USA, INC	
DRAWN	AJS	PORT HADLOCK, MA	
CHECKED		DRAWING NO.	REV. F
ENG. APPR.		D2650	SHEET 6 OF 6
APPROVED		TITLE	SCALE
DE APPR.		2306407 SKIDTUBE ASSEMBLIES	N75
DATE	08.08.08	COPYRIGHT © 1997 BY DART AEROSPACE USA, INC	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

NO. 216

AWS D17.1.2001
QUALIFICATION TEST RECORD

Name: Barclay Elliott
Job number: D206 52867
Part number: D206 642-541
Description: 206 skid
Welding Process: Tig[☒] Mig[]
Base material: Aluminum
Current: AC[☒] DC[]

TEST REQUIREMENTS AND RESULTS

Visual: pass[☒] fail[]
Penetration: pass[☒] fail[]

UNACCEPTABLE

Cracks: pass[☒] fail[]
Undercut: pass[☒] fail[]
Pin holes: pass[☒] fail[]
Overlap (cold lap): pass[☒] fail[]
Porosity (surface): pass[☒] fail[]
Coloration: pass[☒] fail[]

Qualifier Peterson Date of Test Coupon 09-11-10
Welder Barclay Elliott Date of Test Coupon 09-11-10

The above named individual is qualified in accordance with AWS D17.1.2001 to weld